

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD  
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. \_\_\_\_\_  
FOR  
COUNTY OF GLENN,  
PATRICK FOLEY, TRUSTEE, AND COLEMAN FOLEY MARITAL TRUST  
FOR  
OPERATION, EVALUATION MONITORING, AND CORRECTIVE ACTION  
GLENN COUNTY CLASS III MUNICIPAL SOLID WASTE LANDFILL  
GLENN COUNTY

The Discharger shall comply with this Monitoring and Reporting Program, with Title 27, California Code of Regulations, Section 20005, et seq. (hereafter Title 27), and with the *Standard Provisions and Reporting Requirements for Waste Discharge Requirements for Nonhazardous Solid Waste Discharges Regulated by Title 27 and/or Subtitle D (27 CCR §20005 et seq. and 40 CFR 258)*, dated April 2000, which are incorporated by reference in Waste Discharge Requirements (WDR) Order No. \_\_\_\_\_.

**A. REQUIRED MONITORING REPORTS**

<b><u>REPORT</u></b>	<b><u>FREQUENCY</u></b>
1 Groundwater Monitoring (see D.1 below)	Quarterly
2 Annual Monitoring Summary Report	Annually
3 Unsaturated Zone Monitoring (see D.2 below)	Quarterly
4 Leachate Monitoring (see D.3. below)	Semiannually
5 Surface Water Monitoring (see D.4 below) (White Cabin Creek)	Quarterly
6 Winterization Plan (Erosion and Sediment Control Plan)	Annually by 15 September
7 Facility Monitoring Report (see D.5.a below)	Annually by 15 November
8 Response to a Release (Standard Provisions and Reporting Requirement)	As Necessary

**B. REPORTS**

The Discharger shall report monitoring data and information as required in this Monitoring and Reporting Program and as required in Order No. \_\_\_\_\_ and the Standard Provisions and Reporting Requirements. Reports that do not comply with the required format will be **REJECTED** and the Discharger shall be deemed to be in noncompliance with the waste

discharge requirements. In reporting the monitoring data required by this program, the Discharger shall arrange the data in tabular form so that the date, the constituents, the concentrations, and the units are readily discernible. The data shall be summarized in such a manner so as to illustrate clearly the compliance with waste discharge requirements or the lack thereof. Data shall also be submitted in a digital format acceptable to the Executive Officer.

Each monitoring report shall include a compliance evaluation summary as specified in Reporting Requirements E.3 below.

Field and laboratory tests shall be reported in each monitoring report. Method detection limits and practical quantitation limits shall be clearly identified for each constituent analyzed. Quarterly, semiannual, and annual monitoring reports shall be submitted to the Regional Water Board in accordance with the following schedule for the calendar period in which samples were taken or observations made:

<u>Sampling Frequency</u>	<u>Reporting Frequency</u>	<u>Reporting Periods End</u>	<u>Report Date Due</u>
Quarterly	Quarterly	31 March	<b>30 April</b>
		30 June	<b>31 July</b>
		30 September	<b>31 October</b>
		31 December	<b>31 January</b>
Semi Annually	Semiannually	30 June	<b>31 July</b>
		31 December	<b>31 January</b>
Annually	Annually	31 December	<b>31 January</b>

**Constituents of Concern shall be monitored in accordance with the frequencies listed in Tables I through IV.**

The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the previous monitoring year. The annual report shall contain the information specified in Reporting Requirements E.5 below, and a discussion of compliance with the waste discharge requirements and the Water Quality Protection Standard.

The results of **all monitoring** conducted at the site shall be reported to the Regional Water Board in accordance with the reporting schedule above for the calendar period in which samples were taken or observations made.

## **C. WATER QUALITY PROTECTION STANDARD AND COMPLIANCE PERIOD**

The Discharger shall submit a Water Quality Protection Standard Report in accordance with Monitoring Specification E.2 of WDR Order No. \_\_\_\_\_. For each waste management unit (Unit), the Water Quality Protection Standard shall consist of all monitoring parameters and constituents of concern, the concentration limits for each monitoring parameter and constituent of concern, the point of compliance, and all water quality monitoring points for each monitored medium. The Water Quality Protection Standard, or any modification thereto, shall be submitted in a report for review and approval.

The Water Quality Protection Standard Report shall include, at a minimum, the following information:

### **1. Water Quality Protection Standard**

The report shall:

- a. Identify **all distinct bodies of surface and ground water** that could be affected in the event of a release from a Unit or portion of a Unit. This list shall include at least the uppermost aquifer and any permanent or ephemeral zones of perched groundwater underlying the facility.
- b. Include a map showing the monitoring points and background monitoring points for the surface water monitoring program, groundwater monitoring program, and the unsaturated zone monitoring program. The map shall include the point of compliance in accordance with §20405 of Title 27.
- c. Evaluate the perennial direction(s) of groundwater movement within the uppermost groundwater zone(s).

The Water Quality Protection Standard shall be certified by a California-registered Professional Civil Engineer or Professional Geologist as meeting the requirements of Title 27. If subsequent sampling of the background monitoring point(s) indicates significant water quality changes due to either seasonal fluctuations or other reasons unrelated to waste management activities at the site, the Discharger may request modification of the Water Quality Protection Standard.

### **2. Constituents of Concern**

The constituents of concern include all the waste constituents, their reaction products, and hazardous constituents that are reasonably expected to be in or derived from waste contained in the Unit. The constituents of concern for all Units at the facility are those listed in Tables I through V for the specified monitored medium. The Discharger shall

monitor all constituents of concern in accordance with the frequencies and methods listed in Tables I through V.

**a. Monitoring Parameters**

Monitoring parameters are constituents of concern that are the waste constituents, reaction products, hazardous constituents, and physical parameters that provide a reliable indication of a release from a Unit. The monitoring parameters for all Units are those listed in Tables I through V for the specified monitored medium.

**3. Concentration Limits**

For a naturally occurring constituent of concern, the concentration limit shall be determined as follows:

- a. By calculation in accordance with a statistical method pursuant to §20415(e)(8) of Title 27; or
- b. By an alternate statistical method meeting the requirements of §20415(e)(8)(E) of Title 27.

**4. Point of Compliance**

The point of compliance for the water standard at each Unit is a vertical surface located at the hydraulically downgradient limit of the Unit that extends through the uppermost aquifer underlying the Unit.

**5. Compliance Period**

The compliance period for each Unit shall be the number of years equal to the active life of the Unit plus the closure period. The compliance period is the minimum period during which the Discharger shall conduct a water quality monitoring program subsequent to a release from the Unit. The compliance period shall begin anew each time the Discharger initiates an Evaluation Monitoring Program.

**D. MONITORING**

The Discharger shall comply with the Evaluation Monitoring Program provisions of Title 27 for groundwater, surface water, and the unsaturated zone, in accordance with Monitoring Specifications E.1 and E.3 of Waste Discharge Requirements, Order No. \_\_\_\_\_. All monitoring shall be conducted in accordance with a Sample Collection and Analysis Plan, which includes quality assurance/quality control standards, that shall be submitted for review and approval by the Executive Officer.

All point of compliance monitoring wells established for the Evaluation Monitoring Program shall constitute the monitoring points for the groundwater Water Quality Protection Standard. All Evaluation Monitoring Program groundwater monitoring wells, unsaturated zone monitoring devices, leachate, and surface water monitoring points shall be sampled and analyzed for monitoring parameters and constituents of concern as indicated and listed in Tables I through IV and this MRP.

Method detection limits and practical quantitation limits shall be reported. All peaks shall be reported, including those that cannot be quantified and/or specifically identified. Metals shall be analyzed in accordance with the methods listed in Table V.

The Discharger may use alternative analytical test methods, including new USEPA approved methods, provided the methods have method detection limits equal to or lower than the analytical methods specified in this Monitoring and Reporting Program, once approval is granted by the Executive Officer.

## **1. Groundwater**

The Discharger shall operate and maintain a groundwater monitoring system that complies with the applicable provisions of §20415 and §20425 of Title 27 in accordance with an approved Evaluation Monitoring Program. The monitoring system shall be certified by a California-licensed Professional Civil Engineer or Geologist as meeting the requirements of Title 27. The Discharger shall collect, preserve, and transport groundwater samples in accordance with an approved Sample Collection and Analysis Plan.

The Discharger shall determine the groundwater flow rate and direction in the uppermost aquifer and in any zones of perched water and in any additional zone of saturation monitored pursuant to this Monitoring and Reporting Program, and report the results quarterly, including the times of highest and lowest elevations of the water levels in the wells.

Hydrographs of each well shall be submitted showing the elevation of groundwater with respect to the elevations of the top and bottom of the screened interval and the elevation of the pump intake. Hydrographs of each well shall be prepared quarterly and submitted with the Annual Monitoring Summary Report.

Groundwater samples shall be collected from the point-of-compliance wells, background wells, and any additional wells added as part of the approved groundwater monitoring system. Samples shall be collected and analyzed for the monitoring parameters and constituents of concern in accordance with the methods and frequencies specified in Tables I through V.

The monitoring parameters shall also be evaluated each reporting period with regards to the cation/anion balance, and the results shall be graphically presented using a Stiff diagram, a Piper graph, or a Schoeller plot. Samples for the constituents of concern specified in Table I shall be collected and analyzed in accordance with the methods and frequencies listed in Tables I and V.

The existing groundwater monitoring system at Glenn County Landfill consists of five monitoring wells, with one of those wells constructed as a dual completion across two different water bearing formations (M-7A and M-7B). This groundwater monitoring system does not satisfy the requirements contained in Title 27, Section 20415(b), because there are not a sufficient number of monitoring points screened across the upper most aquifer, which occurs approximately 60 to 70 feet below ground surface (bgs), to determine groundwater flow direction and velocity.

A description of the current groundwater monitoring system construction details follows:

Well ID	Service Type	*Location	Depth	Screen Interval
M-4	Compliance	1,000 ft SE of SW Property Boundary	163 ft bgs	152 ft to 162 ft bgs
M-5	Compliance	SE Corner of Area A	120 ft bgs	108 ft to 118 ft bgs
M-6	Compliance	2,850 ft SE of NW Property Boundary	143 ft bgs	132 ft to 142 ft bgs
M-7A	Compliance	750 ft SE of NW Property Boundary	70.2 ft bgs	60 ft to 70 ft bgs
M-7B	Compliance	750 ft SE of NW Property Boundary	145.2 ft bgs	110 ft to 145 ft bgs
M-8	Compliance	1,350 ft S of NW Property Boundary	165.9 ft bgs	144.5 ft to 164.7 ft bgs

\*Locations are estimated  
bgs = Below Ground Surface

## 2. **Unsaturated Zone Monitoring**

The Glenn County Landfill has one suction lysimeter (SL-1) located at the west side of the landfill approximately 600 feet south of the northwest property boundary. Lysimeter SL-1 consistently produces sufficient soil pore liquids for volatile organic compound analyses.

A sample shall be collected from lysimeter SL-1 quarterly and analyzed for volatile organic compounds using EPA Method 8260B as indicated in Table II. Monitoring shall also include the total volume of soil pore liquids recovered. Lysimeter samples shall be

collected, preserved, and transported in accordance with the quality assurance/quality control standards contained in the approved Sample Collection and Analysis Plan. Unsaturated zone monitoring reports shall be included with the corresponding quarterly groundwater monitoring report and shall include an evaluation of potential impacts of the facility on the unsaturated zone and compliance with the Water Quality Protection Standard.

### 3. **Leachate Monitoring/Seeps**

The Glenn County Landfill has no leachate collection and removal system in place. Many leachate seeps have been observed across the surface of the Unit during wet weather months. During the 2005/2006 winter, leachate was observed seeping out of fill slopes and pooling along the landfill property boundary. During periods of rain, pooled leachate runs off-site. The Discharger is required to keep leachate seeps within the Unit boundary.

From 1 October through 31 May of each year, the Discharger shall inspect Unit surfaces for leachate seeps on a weekly basis. From 1 June through 30 September of each year, the Discharger shall inspect Unit surfaces for leachate seeps on a monthly basis. Inspection dates and observations shall be recorded and submitted with the leachate monitoring report. Upon detection of leachate seeping to the Unit surface, the Discharger shall sample and analyze the leachate at the frequencies and for the constituents listed in Table III. Monitoring shall also include an estimate of the flow rate and total volume of leachate observed. The Discharger shall notify the Regional Water Board **immediately** upon detecting any leachate seeps and follow-up in writing **within seven days** of detecting the leachate seep with a description of actions taken to analyze the liquids and contain the leachate within the Unit (also see Reporting Requirements E.4 below). Leachate monitoring reports shall be included with the corresponding quarterly groundwater monitoring report and shall include an evaluation of potential impacts of the leachate seeps on surface water and groundwater.

### 4. **Surface Water Monitoring**

Surface water runoff from the Glenn County Landfill drains toward White Cabin Creek, located approximately 1,000 feet south of the southern property boundary. White Cabin Creek is an ephemeral stream with flows occurring during wet weather months and precipitation events.

The Discharger shall implement a surface water Evaluation Monitoring Program that complies with the applicable provisions of §20415 and §20425 of Title 27. Monitoring of White Cabin Creek shall include visual observations (See Reporting Requirements E.3.e.3 below) on a weekly basis from 1 October through 31 May of each year. Visual monitoring of White Cabin Creek shall be monthly from 1 June through 30 September of

each year. Samples shall be obtained semiannually (provided there is flow in the creek) from points approximately 100 feet upstream (background) and 100 feet downstream (compliance) of the landfill. Samples shall be analyzed for the monitoring parameters and constituents of concern listed in Table IV. Surface water monitoring reports shall be included with the corresponding quarterly groundwater monitoring report.

## 5. Facility Monitoring

From 1 October through 31 May of each year, facility monitoring shall occur on a weekly basis. From 1 June through 30 September of each year, facility monitoring shall occur on a monthly basis. Facility monitoring shall include the Standard Observations described in Reporting Requirements E.3.f below. The dates and results of the facility monitoring shall be included with each corresponding quarterly groundwater monitoring report.

### a. Facility Inspection

Annually, prior to the anticipated rainy season, but no later than **30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess damage to the drainage control system, groundwater monitoring equipment (including wells, etc.), and shall include the Standard Observations contained in Section E.3.f., below. Any necessary construction, maintenance, or repairs shall be completed by **31 October**. By **15 November** of each year, the Discharger shall submit an annual report describing the results of the inspection and the repair measures implemented, including photographs of the problem and the repairs.

### b. Storm Events

The Discharger shall inspect all precipitation, diversion, and drainage facilities for damage **within 2 days** following *major storm events*. The inspection shall include the Standard Observations described in Reporting Requirements E.3.f below. Major storm events are defined as 1.0 inch or greater of precipitation within a 24 hour period. Necessary repairs shall be completed **within 30 days** of the inspection. Storm event monitoring results shall be included with each corresponding quarterly groundwater monitoring report. Storm event monitoring shall include the inspection date(s), the person conducting the inspection, and the amount of precipitation received within the 24 hour period. If no precipitation events of 1.0 inch or greater within a 24 hour period occur during the reporting period, then the storm event monitoring report shall state such. Storm event monitoring reports shall be included with each corresponding quarterly groundwater monitoring report.



## **E. REPORTING REQUIREMENTS**

1. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained throughout the life of the facility including the post-closure period.

Such legible records shall show the following for each sample:

- a. Sample identification and the monitoring point or background monitoring point from which it was taken, along with the identity of the individual who obtained the sample;
  - b. Date, time, and manner of sampling;
  - c. Date and time that analyses were started and completed, and the name of the personnel and laboratory performing each analysis;
  - d. Complete procedure used, including method of preserving the sample, and the identity and volumes of reagents used;
  - e. Calculation of results; and
  - f. Results of analyses, and the MDL and PQL for each analysis.
2. A transmittal letter explaining the essential points shall accompany each report. At a minimum, the transmittal letter shall identify any violations found since the last report was submitted, and if the violations were corrected. If no violations have occurred since the last submittal, this shall be stated in the transmittal letter. The transmittal letter shall also state that a discussion of any violations found since the last report was submitted, and a description of the actions taken or planned for correcting those violations, including any references to previously submitted time schedules, is contained in the accompanying report.
  3. Each monitoring report shall include a compliance evaluation summary. The summary shall contain at least
    - a. For each monitoring point and background monitoring point addressed by the report, a description of:
      - 1) The time of water level measurement;
      - 2) The type of pump - or other device - used for purging and the elevation of the pump intake relative to the elevation of the screened interval;

- 3) The method of purging (the pumping rate; the equipment and methods used to monitor field pH, temperature, and conductivity during purging; the calibration of the field equipment; results of the pH, temperature, conductivity, and turbidity testing; and the method of disposing of the purge water) to remove all portions of the water that was in the well bore while the sample was being taken;
  - 4) The type of pump - or other device - used for sampling, if different than the pump or device used for purging; and
  - 5) A statement that the sampling procedure was conducted in accordance with the approved Sample Collection and Analysis Plan.
- b. A map or aerial photograph showing the locations of observation stations, monitoring points, and background monitoring points.
  - c. For each groundwater body, a description and graphical presentation of the gradient and direction of groundwater flow under/around the Unit, and the groundwater flow rate, based upon water level elevations taken prior to the collection of the water quality data submitted in the report.
  - d. Laboratory statements of results of all analyses evaluating compliance with requirements.
  - e. A summary and certification of completion of all **Standard Observations** for the Unit(s), for the perimeter of the Unit, and for the receiving waters. Standard observations for active landfill units shall be conducted **weekly** during the wet season (1 October to 31 May) and **monthly** during the dry season (1 June to 30 September). Standard observations for inactive or closed landfill units shall be conducted **monthly** during the wet season (1 October to 31 May) and **quarterly** during the dry season (1 June to 30 September). The Standard Observations shall include:
    - 1) For the Unit:
      - a) Evidence of ponded water at any point on the facility (show affected area on map);
      - b) Evidence of leachate seepage (show affected area(s) on map);
      - c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
      - d) Evidence of erosion and/or of day-lighted refuse; and
      - e) Date of inspection and name of person conducting inspection.

2) Along the perimeter of the Unit:

- a) Evidence of liquid leaving or entering the Unit, estimated size of affected area, and flow rate (show affected area on map);
- b) Evidence of leachate seepage (show affected area(s) on map);
- c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
- d) Evidence of erosion and/or of day-lighted refuse; and
- e) Date of inspection and name of person conducting inspection.

3) For receiving waters:

- a) Floating and suspended materials of waste origin - presence or absence, source, and size of affected area;
- b) Discoloration and turbidity - description of color, source, and size of affected area;
- c) Evidence of odors - presence or absence, characterization, source, and distance of travel from source;
- d) Evidence of water uses - presence of water-associated wildlife;
- e) Flow rate;
- f) Weather conditions - wind direction and estimated velocity, total precipitation during recent days and on the day of observation;
- g) Date of inspection and name of person conducting inspection.

- f. The quantity and types of wastes discharged and the locations in the Unit where waste has been placed since submittal of the last such report.

4. The Discharger shall report by telephone any seepage from the disposal area **immediately** after it is discovered. A written report shall be filed with the Regional Water Board **within seven days**, containing at least the following information:

- a. A map showing the location(s) of seepage;
- b. An estimate of the flow rate;

- c. A description of the nature of the discharge (e.g., all pertinent observations and analyses);
  - d. Verification that samples have been submitted for analyses of the Monitoring Parameters and Constituents of Concern listed in Table III of this MRP, and an estimated date that the results will be submitted to the Regional Water Board; and
  - e. Corrective measures underway or proposed, and corresponding time schedule.
5. The Discharger shall submit an **Annual Monitoring Summary Report** to the Regional Water Board covering the reporting period of the previous monitoring year. This report shall contain:
- a. All monitoring parameters and constituents of concern shall be graphed so as to show historical trends at each monitoring point and background monitoring point, for all samples taken within at least the previous five calendar years. Each such graph shall plot the concentration of one or more constituents for the period of record for a given monitoring point or background monitoring point, at a scale appropriate to show trends or variations in water quality. The graphs shall plot each datum, rather than plotting mean values. For any given constituent or parameter, the scale for background plots shall be the same as that used to plot downgradient data. Graphical analysis of monitoring data may be used to provide significant evidence of a release.
  - b. All historical monitoring data, including data for the previous year, shall be submitted in tabular form as well as in a digital file format. The Regional Water Board regards the submittal of data in hard copy and in digital format as "...the form necessary for..." statistical analysis [Title 27 CCR Section 20420(h)], in that this facilitates periodic review by the Regional Water Board.
  - c. A comprehensive discussion of the compliance record, and the result of any corrective actions taken or planned which may be needed to bring the Discharger into full compliance with the waste discharge requirements.
  - d. A map showing the area and elevations in which filling has been completed during the previous calendar year and a comparison to final closure design contours.
  - e. A written summary of the monitoring results, indicating any changes made or observed since the previous annual report.
  - f. A discussion of any observed leachate seeps and steps taken to contain leachate within the Unit. The Annual Summary Report shall also include the results of the any leachate analyses.

MONITORING AND REPORTING PROGRAM NO. \_\_\_\_\_  
COUNTY OF GLENN AND PATRICK FOLEY, TRUSTEE,  
COLEMAN FOLEY MARITAL TRUST  
FOR OPERATION, EVALUATION MONITORING, AND CORRECTIVE ACTION  
GLENN COUNTY CLASS III MUNICIPAL SOLID WASTE LANDFILL  
GLENN COUNTY

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The Discharger shall implement the above monitoring program on the effective date of this Program.

Ordered by:

\_\_\_\_\_  
PAMELA C. CREEDON, Executive Officer

\_\_\_\_\_  
(Date)

DPS/KLC: sae  
8/30/06

**TABLE I**  
**GROUNDWATER EVALUATION MONITORING PROGRAM**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Groundwater Elevation	Ft. & hundredths, M.S.L.	Quarterly
Temperature	°C	Quarterly
Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly
Turbidity	Turbidity units	Quarterly
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Quarterly
Chloride	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly
Volatile Organic Compounds (USEPA Method 8260B, extended list specified in Table V)	µg/L	Quarterly
<b>Constituents of Concern (see Table V)</b>		
Total Organic Carbon	mg/L	* Annually
Inorganics (dissolved)	mg/L	* Annually
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	* Annually
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	**5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	**5 years

\*Annual samples are to be obtained during 3<sup>rd</sup> Quarter each year

\*\*5 Year COC Samples are to be obtained during 3<sup>rd</sup> Quarter of every fifth year, beginning in 2007

**TABLE II**  
**UNSATURATED ZONE EVALUATION MONITORING PROGRAM**

**SOIL-PORE GAS**

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Monitoring Parameters</b>		
Volatile Organic Compounds (USEPA Method TO-14)	µg/cm <sup>3</sup>	Semiannual
Methane	%	Semiannual

**LYSIMETER (SL-1)**

Historical sample data indicates that lysimeter SL-1 usually produces less than one liter of liquid per sample event. Lysimeter liquids shall be analyzed for Volatile Organic Compounds first, with any remaining liquid analyzed for the Field Parameters and Monitoring Parameters in the order listed below.

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b><u>Constituents of Concern</u></b>		
Volatile Organic Compounds (USEPA Method 8260B, extended list specified in Table V)	µg/L	Quarterly

**Field Parameters**

Electrical Conductivity	µmhos/cm	Quarterly
pH	pH units	Quarterly

**Monitoring Parameters**

Total Dissolved Solids (TDS)	mg/L	Quarterly
Chloride	mg/L	Quarterly
Carbonate	mg/L	Quarterly
Bicarbonate	mg/L	Quarterly
Nitrate - Nitrogen	mg/L	Quarterly
Sulfate	mg/L	Quarterly
Calcium	mg/L	Quarterly
Magnesium	mg/L	Quarterly
Potassium	mg/L	Quarterly
Sodium	mg/L	Quarterly

**TABLE III**  
**LEACHATE EVALUATION MONITORING PROGRAM**

Leachate seeps shall be sampled upon detection for the Field Parameters, Monitoring Parameters, and Constituents of Concern listed below. If multiple seeps are present, obtain samples from the two largest seeps that are geographically separated by at least 500 feet across the site. If leachate seeps are persistent or occur repeatedly over the wet weather season, an additional sample shall be obtained and analyzed for the constituents listed below three months after the initial sample(s) were obtained.

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Estimated Total Flow	Gallons	Upon Detection
Estimated Flow Rate	Gallons/Day	Upon Detection
Electrical Conductivity	µmhos/cm	Upon Detection
pH	pH units	Upon Detection
<b>Monitoring Parameters</b>		
Total Dissolved Solids (TDS)	mg/L	Upon Detection
Chloride	mg/L	Upon Detection
Carbonate	mg/L	Upon Detection
Bicarbonate	mg/L	Upon Detection
Nitrate - Nitrogen	mg/L	Upon Detection
Sulfate	mg/L	Upon Detection
Calcium	mg/L	Upon Detection
Magnesium	mg/L	Upon Detection
Potassium	mg/L	Upon Detection
Sodium	mg/L	Upon Detection
<b>Constituents of Concern (see Table V)</b>		
Total Organic Carbon	mg/L	Upon Detection
Inorganics (dissolved)	mg/L	Upon Detection
Volatile Organic Compounds (USEPA Method 8260B, extended list)	µg/L	Upon Detection
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	Upon Detection
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	Upon Detection
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	Upon Detection



**TABLE IV**  
**SURFACE WATER EVALUATION MONITORING PROGRAM**

Surface water samples shall be obtained upstream (background) and downstream (compliance) from the landfill after the first rain event causing flow in White Cabin Creek. Samples shall be analyzed for the constituents and at the frequencies listed below. A second sample shall be obtained within six months of the first sample if surface water is still present in the creek.

<u>Parameter</u>	<u>Units</u>	<u>Frequency</u>
<b>Field Parameters</b>		
Temperature	°C	Semiannual
Electrical Conductivity	µmhos/cm	Semiannual
pH	pH units	Semiannual
Turbidity	Turbidity units	Semiannual

**Monitoring Parameters**

Suspended Solids	mg/L	Semiannual
Settleable Solids	mg/L	Semiannual
Total Dissolved Solids (TDS)	mg/L	Semiannual
Carbonate	mg/L	Semiannual
Bicarbonate	mg/L	Semiannual
Chloride	mg/L	Semiannual
Nitrate - Nitrogen	mg/L	Semiannual
Sulfate	mg/L	Semiannual
Calcium	mg/L	Semiannual
Magnesium	mg/L	Semiannual
Potassium	mg/L	Semiannual
Sodium	mg/L	Semiannual
Volatile Organic Compounds	µg/L	Semiannual
(USEPA Method 8260B, extended list specified in Table V)		

**Constituents of Concern (see Table V)**

Total Organic Carbon	mg/L	**5 years
Inorganics (dissolved)	mg/L	**5 years
Semi-Volatile Organic Compounds (USEPA Method 8270C)	µg/L	**5 years
Chlorophenoxy Herbicides (USEPA Method 8151A)	µg/L	**5 years
Organophosphorus Compounds (USEPA Method 8141A)	µg/L	**5 years

\*\*5 Year COC Samples are to be obtained during 3<sup>rd</sup> Quarter of every fifth year, beginning in 2007

**TABLE V**  
**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

<b><u>Inorganics (dissolved):</u></b>	<b><u>USEPA Method</u></b>
Aluminum	6010
Antimony	7041
Barium	6010
Beryllium	6010
Cadmium	7131A
Chromium	6010
Cobalt	6010
Copper	6010
Silver	6010
Tin	6010
Vanadium	6010
Zinc	6010
Iron	6010
Manganese	6010
Arsenic	7062
Lead	7421
Mercury	7470A
Nickel	7521
Selenium	7742
Thallium	7841
Cyanide	9010B
Sulfide	9030B

**Volatile Organic Compounds:**

**USEPA Method 8260**

Acetone  
Acetonitrile (Methyl cyanide)  
Acrolein  
Acrylonitrile  
Allyl chloride (3-Chloropropene)  
Benzene  
Bromochloromethane (Chlorobromomethane)  
Bromodichloromethane (Dibromochloromethane)  
Bromoform (Tribromomethane)  
Carbon disulfide  
Carbon tetrachloride  
Chlorobenzene  
Chloroethane (Ethyl chloride)  
Chloroform (Trichloromethane)  
Chloroprene  
Dibromochloromethane (Chlorodibromomethane)

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

1,2-Dibromo-3-chloropropane (DBCP)  
1,2-Dibromoethane (Ethylene dibromide; EDB)  
o-Dichlorobenzene (1,2-Dichlorobenzene)  
m-Dichlorobenzene (1,3-Dichlorobenzene)  
p-Dichlorobenzene (1,4-Dichlorobenzene)  
trans- 1,4-Dichloro-2-butene  
Dichlorodifluoromethane (CFC 12)  
1,1 -Dichloroethane (Ethylidene chloride)  
1,2-Dichloroethane (Ethylene dichloride)  
1,1 -Dichloroethylene (1, 1-Dichloroethene; Vinylidene chloride)  
cis- 1,2-Dichloroethylene (cis- 1,2-Dichloroethene)  
trans- 1,2-Dichloroethylene (trans- 1,2-Dichloroethene)  
1,2-Dichloropropane (Propylene dichloride)  
1,3-Dichloropropane (Trimethylene dichloride)  
2,2-Dichloropropane (Isopropylidene chloride)  
1,1 -Dichloropropene  
cis- 1,3-Dichloropropene  
trans- 1,3-Dichloropropene  
Di-isopropylether (DIPE)  
Ethanol  
Ethyltertiary butyl ether  
Ethylbenzene  
Ethyl methacrylate  
Hexachlorobutadiene  
Hexachloroethane  
2-Hexanone (Methyl butyl ketone)  
Isobutyl alcohol  
Methacrylonitrile  
Methyl bromide (Bromomethane)  
Methyl chloride (Chloromethane)  
Methyl ethyl ketone (MEK; 2-Butanone)  
Methyl iodide (Iodomethane)  
Methyl t-butyl ether  
Methyl methacrylate  
4-Methyl-2-pentanone (Methyl isobutyl ketone)  
Methylene bromide (Dibromomethane)  
Methylene chloride (Dichloromethane)  
Naphthalene  
Propionitrile (Ethyl cyanide)  
Styrene  
Tertiary amyl methyl ether  
Tertiary butyl alcohol  
1,1,1,2-Tetrachloroethane  
1,1,2,2-Tetrachloroethane  
Tetrachloroethylene (Tetrachloroethene; Perchloroethylene; PCE)

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

Toluene  
1,2,4-Trichlorobenzene  
1,1,1 -Trichloroethane, Methylchloroform  
1,1,2-Trichloroethane  
Trichloroethylene (Trichloroethene; TCE)  
Trichlorofluoromethane (CFC- 11)  
1,2,3-Trichloropropane  
Vinyl acetate  
Vinyl chloride (Chloroethene)  
Xylene (total)

**Semi-Volatile Organic Compounds:**

**USEPA Method 8270 - base, neutral, & acid extractables**

Acenaphthene  
Acenaphthylene  
Acetophenone  
2-Acetylaminofluorene (2-AAF)  
Aldrin  
4-Aminobiphenyl  
Anthracene  
Benzo[a]anthracene (Benzanthracene)  
Benzo[b]fluoranthene  
Benzo[k]fluoranthene  
Benzo[g,h,i]perylene  
Benzo[a]pyrene  
Benzyl alcohol  
Bis(2-ethylhexyl) phthalate  
alpha-BHC  
beta-BHC  
delta-BHC  
gamma-BHC (Lindane)  
Bis(2-chloroethoxy)methane  
Bis(2-chloroethyl) ether (Dichloroethyl ether)  
Bis(2-chloro-1-methylethyl) ether (Bis(2-chloroisopropyl) ether; DCIP)  
4-Bromophenyl phenyl ether  
Butyl benzyl phthalate (Benzyl butyl phthalate)  
Chlordane  
p-Chloroaniline  
Chlorobenzilate  
p-Chloro-m-cresol (4-Chloro-3-methylphenol)  
2-Chloronaphthalene  
2-Chlorophenol  
4-Chlorophenyl phenyl ether  
Chrysene

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

o-Cresol (2-methylphenol)  
m-Cresol (3-methylphenol)  
p-Cresol (4-methylphenol)  
4,4'-DDD  
4,4'-DDE  
4,4'-DDT  
Diallate  
Dibenz[a,h]anthracene  
Dibenzofuran  
Di-n-butyl phthalate  
3,3'-Dichlorobenzidine  
2,4-Dichlorophenol  
2,6-Dichlorophenol  
Dieldrin  
Diethyl phthalate  
p-(Dimethylamino)azobenzene  
7,12-Dimethylbenz[a]anthracene  
3,3'-Dimethylbenzidine  
2,4-Dimethylphenol (m-Xylenol)  
Dimethyl phthalate  
m-Dinitrobenzene  
4,6-Dinitro-o-cresol (4,6-Dinitro-2-methylphenol)  
2,4-Dinitrophenol  
2,4-Dinitrotoluene  
2,6-Dinitrotoluene  
Di-n-octyl phthalate  
Diphenylamine  
Endosulfan I  
Endosulfan II  
Endosulfan sulfate  
Endrin  
Endrin aldehyde  
Ethyl methanesulfonate  
Famphur  
Fluoranthene  
Fluorene  
Heptachlor  
Heptachlor epoxide  
Hexachlorobenzene  
Hexachlorocyclopentadiene  
Hexachloropropene  
Indeno(1,2,3-c,d)pyrene  
Isodrin  
Isophorone  
Isosafrole

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

Kepone  
Methapyrilene  
Methoxychlor  
3-Methylcholanthrene  
Methyl methanesulfonate  
2-Methylnaphthalene  
1,4-Naphthoquinone  
1-Naphthylamine  
2-Naphthylamine  
o-Nitroaniline (2-Nitroaniline)  
m-Nitroaniline (3-Nitroaniline)  
p-Nitroaniline (4-Nitroaniline)  
Nitrobenzene  
o-Nitrophenol (2-Nitrophenol)  
p-Nitrophenol (4-Nitrophenol)  
N-Nitrosodi-n-butylamine (Di-n-butylNitrosamine)  
N-Nitrosodiethylamine (DiethylNitrosamine)  
N-Nitrosodimethylamine (DimethylNitrosamine)  
N-Nitrosodiphenylamine (DiphenylNitrosamine)  
N-Nitrosodipropylamine (N-Nitroso-N-dipropylamine; Di-n-propylNitrosamine)  
N-Nitrosomethylethylamine (MethylethylNitrosamine)  
N-Nitrosopiperidine  
N-Nitrosospyrrolidine  
5-Nitro-o-toluidine  
Pentachlorobenzene  
Pentachloronitrobenzene (PCNB)  
Pentachlorophenol  
Phenacetin  
Phenanthrene  
Phenol  
p-Phenylenediamine  
Polychlorinated biphenyls (PCBs; Aroclors)  
Pronamide  
Pyrene  
Safrole  
1,2,4,5-Tetrachlorobenzene  
2,3,4,6-Tetrachlorophenol  
o-Toluidine  
Toxaphene  
2,4,5-Trichlorophenol  
0,0,0-Triethyl phosphorothioate  
sym-Trinitrobenzene

**TABLE V**

**CONSTITUENTS OF CONCERN & APPROVED USEPA ANALYTICAL METHODS**

**Continued**

**Chlorophenoxy Herbicides:**

**USEPA Method 8151A**

2,4-D (2,4-Dichlorophenoxyacetic acid)  
Dinoseb (DNBP; 2-sec-Butyl-4,6-dinitrophenol)  
Silvex (2,4,5-Trichlorophenoxypropionic acid; 2,4,5-TP)  
2,4,5-T (2,4,5-Trichlorophenoxyacetic acid)

**Organophosphorus Compounds:**

**USEPA Method 8141A**

Atrazine  
Chlorpyrifos  
0,0-Diethyl 0-2-pyrazinyl phosphorothioate (Thionazin)  
Diazinon  
Dimethoate  
Disulfoton  
Ethion  
Methyl parathion (Parathion methyl)  
Parathion  
Phorate  
Simazine